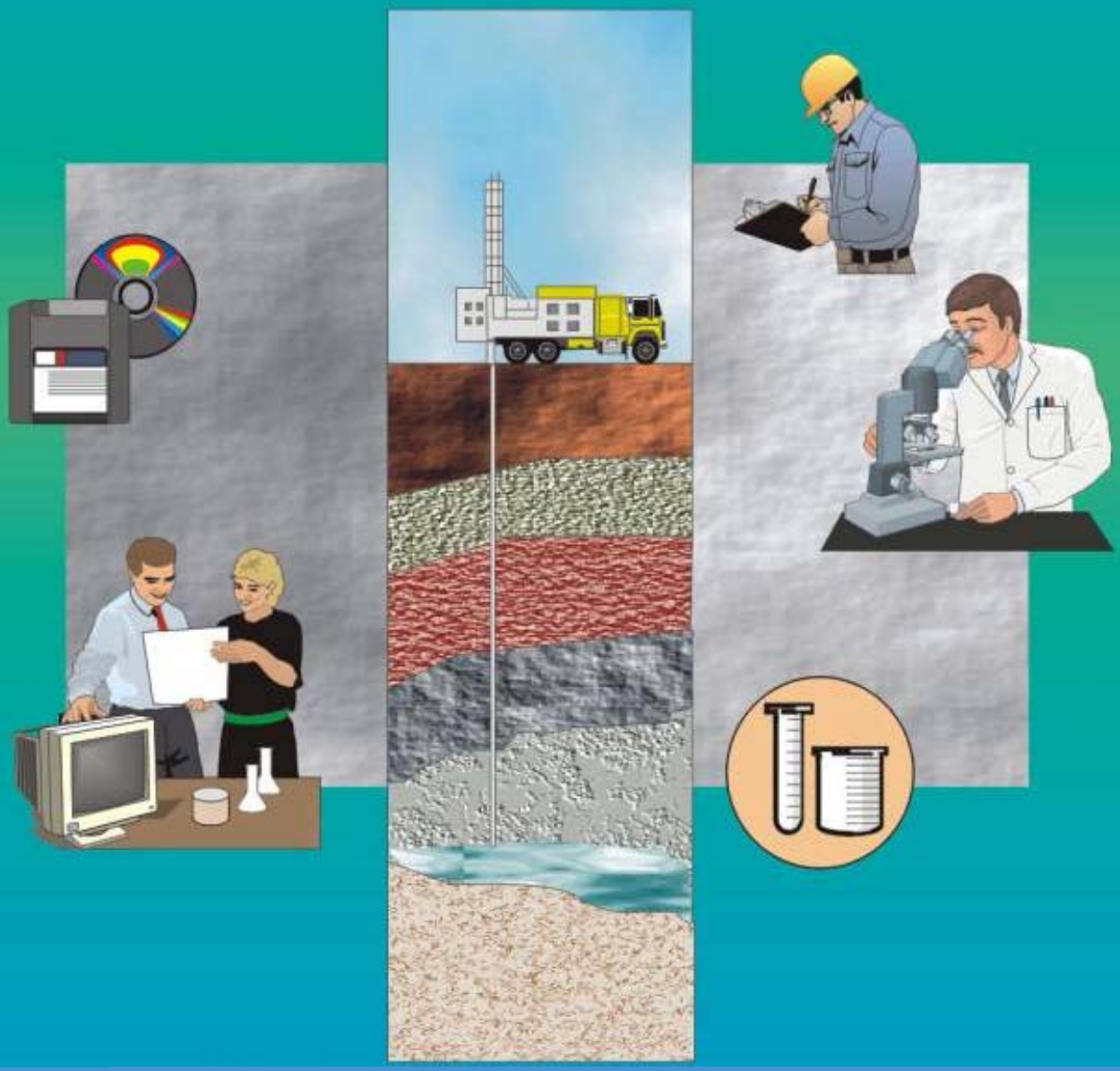
Electronic Data Deliverable (EDD)

Specification Manual

Version 2.1



U.S. Environmental Protection Agency
Region 2, 290 Broadway
New York, NY 10007

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EarthSoft Inc. prepared the Electronic Lab Data Checker (ELDC) and the Electronic Field Data Checker (FLDC) programs and reviewed the EDD document to assure its technical accuracy.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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EXECUTIVE SUMMARY

The purpose of this document is to provide detailed instructions for the reporting of environmental data generated by site characterization and investigation, installation of monitoring wells, and continued sampling at a site. It describes the Electronic Data Deliverable (EDD) - a combination of requirements and procedures for reporting data in electronic files after each phase of environmental investigation and throughout the site remediation and monitoring process. This specification applies to data being submitted under the Superfund and RCRA programs. Data submitted under water programs (*e.g.*, 305(b)) are loaded directly into Storet and are not addressed in this document. In this section, a summary is provided to allow managers to understand and guide the process. EPA's goal in defining an EDD is to expedite the transfer of data from the US EPA data providers. Other programs employing this approach have realized significant time and cost savings. The reason this approach is efficient is that it allows the US EPA data providers to fully understand EPA requirements and to communicate these requirements to its employees and contractors. All data can be compiled into the EDD throughout the Monitoring Program and therefore not add a separate data management task once all data have been collected.

The EDD is comprised of three distinct sets of files: Initial, Chemistry, and Geology. The Initial EDD consists of a CAD site drawing and three files containing data pertaining to the site, the sampling locations within a site and the specifics about the data provider. Most of the data submitted over the life of the project will be chemistry data. The Chemistry EDD files contain field measurement, sample, test/result, and water level information. The Geology EDD files contain data regarding lithology, well construction, and wells. Figures E-1 and E-2 show the EDD creation process for chemistry and geology respectively.

As shown in Figures E-1 and E-2, the process of creating the EDD files begins with software selection. Many software tools are capable of creating the EDD files including text editors, word processors, spreadsheets, and databases. However, spreadsheets and databases are designed to enter and manage data and are really the best tools to use. Microsoft® Access and Excel users can use the files supplied by EPA Region 2 that are already formatted and ready for data entry. Users of other software can convert the Excel or Access files or can define the EDD in the software of their choice. The production of the data tables will normally be a collaborative effort between laboratories and environmental contractors. The laboratories will typically produce the test/results tables while the contractors normally will produce all of the other tables.

After the software has been selected the data entry process begins. As shown in Figure E-1, there are several decision points that exist to prevent redundant chemistry data reporting. For example, the data describing a site and the site contact should only be reported once. When creating the EDD ask, “Has the site ever been reported?” If the answer is yes, then no site file should be reported with the EDD. If the answer is no, then this must be the first EDD reported for that site and therefore the site file should be reported. A similar decision process is followed for locations. Locations only need to be reported once for any site. The only time a location is reported more than once is if the data have changed in some way. For example, the location may

have been resurveyed. Information about the data provider is only reported once also. Sample and test/results data constitute the bulk of EDD submissions. While it is rare, it is possible that tests and results are being reported for a sample(s) that was part of an earlier EDD sample file. In this case, the sample data should not be reported again. The Test/Results file should contain new data only. If data are being resubmitted, this must be clearly documented in a cover letter to assure that outdated information is removed from the database. The final step before submitting the EDD files is to check them using the "Electronic Laboratory Data Checker" (ELDC) software that is provided on the REDI web site. This software will uncover errors in the EDD files that must be corrected prior to submission.

The process used to compile the geology EDD is shown in Figure E-2 and works the same as the chemistry EDD described above. The biggest difference is that the ELDC software will not check the geology EDD files. An "Electronic Field Data Checker" (EFDC) is used to uncover errors in the Geology EDD files. Again, any data re-submissions must be clearly documented in the cover letter.

EPA Region 2 is providing a technical help line to assist the US EPA data providers in understanding and using the EDD. Both phone and email support are available. Please see Section 6 of this document for technical support information.

Figure E-1. Process flow diagram for the creation and checking of chemistry EDD files

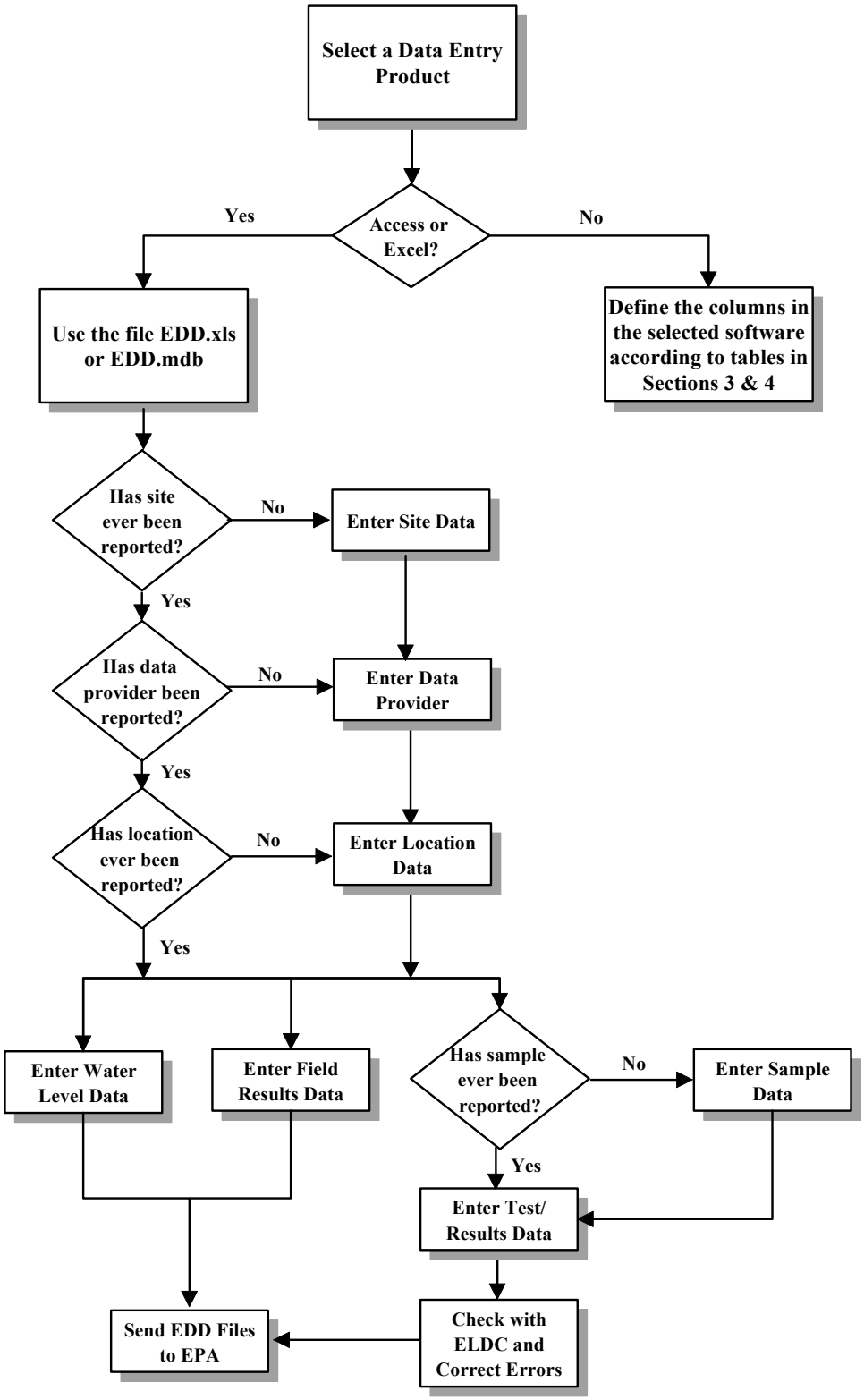
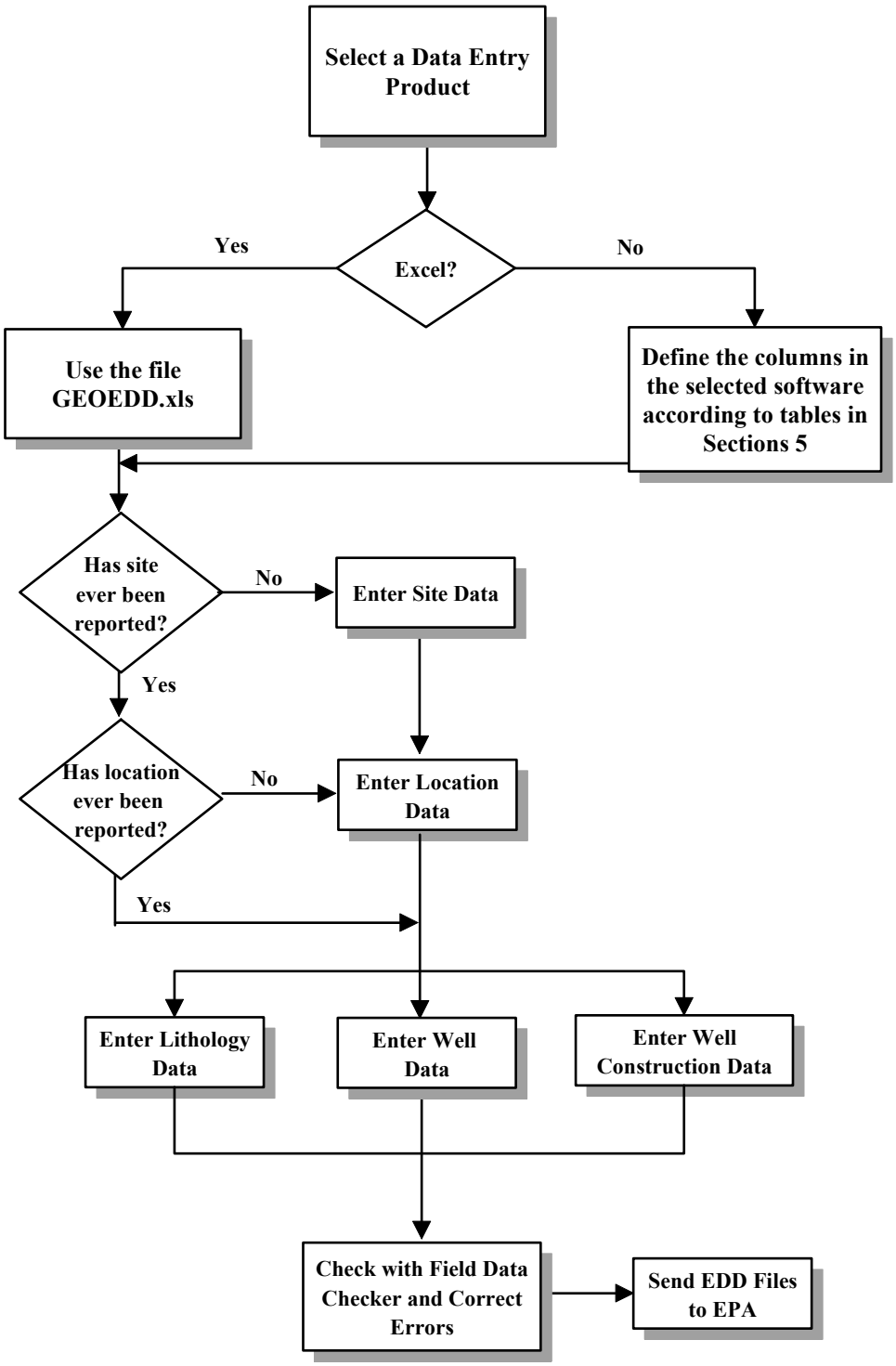


Figure E-2. Process flow diagram for the creation and checking of geology EDD files



1. INTRODUCTION TO THE ELECTRONIC DATA DELIVERABLE (EDD)

EPA Region 2 has developed the Regional Environmental Data Initiative (REDI) system to improve how environmental data from Superfund, RCRA, and Water sites are acquired and managed. The REDI system provides multiple solutions for visually displaying site characteristics, measuring remediation progress, and confirming compliance status. The results of REDI will be to accelerate the review of environmental data submissions, improve service to the regulated community, and enhance the protection of the environment and the public. A vital element to the successful deployment of the REDI system is the electronic transfer of environmental data from the data providers to EPA in a standardized format. This EDD specification was developed to facilitate that transfer of data from data providers to the EPA.

The EDD is based on a national EDD specification developed by staff from multiple regional offices. The format is designed to be software-independent and easy to achieve. Any spreadsheet, database, or text editor can be used to create the EDD files. Examples of these applications include Access, FoxPro®, Excel, Quattro®, Lotus® 1-2-3®, and Notepad.

Basically, the EDD is a series of file structures that is used to report data. For example, one file structure is used to report location data while another is used to report samples collected at a location. Multiple files are used to eliminate the need to report redundant data. For example, the data (coordinates, elevation, etc.) for a location are reported once in the location file. Many years of data may be reported for that location without reporting the location information again.

This document includes examples that illustrate how the EDD files should look after loading your data into them. In addition, several templates for loading data into the EDD format and 2 software programs, EPA2Lab Data Checker (ELDC) and EPAR2Electronic Field Data Checker (EFDC), are provided to check your EDD files before reporting.

<u>The EDD specification is discussed in five separate sections:</u>

- General reporting requirements are discussed in Section 2.
- The initial site, location file and data provider structures are defined in Section 3. These files must be submitted prior to, or in conjunction with, the first Chemistry or Geology EDD submittals.
- The Chemistry file structures are defined in Section 4. Chemistry data accounts for the majority of reportable data for this program.
- The Geology file structures are defined in Section 5.
- Finally, the appendix contains information on valid values and provides a listing of facility IDs for Superfund sites within EPA Region 2.

Each file must be reported exactly as defined in these sections. Any deviations will result in loading errors.

US EPA expects all fields with either "Required" or "If available" to be completed. The data type "Required" only refers to the need of the data in order to load data into the database. There may be data types of "If available" or "If applicable" where the data are not available or applicable. In these cases, include in the cover letter to the appropriate Region 2 project manager a description of any fields that are not available or not applicable and the reason why.

2. REPORTING REQUIREMENTS FOR EDD

2.1 File Formats

With the exception of the electronic base map, all data from the US EPA data providers must be reported as text files using the following standard formats. Each data field must be separated by tabs (tab delimited) or comma delimited (CSV) optionally enclosed in double quotes ("). Data fields containing no information may be represented by two tabs (see example below on Null Format,
Section 2.7) or two commas. Maximum length of text fields is indicated in parentheses within the EDD tables shown in Sections 3, 4, and 5. If the information is less than the maximum length, do not pad the record with spaces. Each record (line of information) must be terminated with a carriage return/line feed (created by pressing the enter key in a text editor). Guidance on creating these text files can be found in Section 2.14.

Chemistry and geology data are submitted from the US EPA data providers in a series of files. Multiple files are used to eliminate the need to report redundant data. Details of the formats for the initial, chemistry, and geology files are presented in Sections 3, 4, and 5, respectively. Table 2-1, Table 2-2, and Table 2-3 provide an introduction to the files that comprise the Initial EDD, Chemistry EDD, and Geology EDD, respectively.

An electronic base map must also be submitted along with the initial site and location files. The site base map must be a CAD file in DXF interchange format. Further details regarding the base map are given in Section 3.

Table 2-1. General information on the files that comprise the Initial EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Base Map	SiteName.DXF	US EPA data provider	Base Map of Site	Not Applicable	Not Applicable.
Site	SiteNameDate. EPAID. EPAR2SITE_v1. txt (or csv)	US EPA data provider	One time definition of site including US EPA data providers' contact information.	site_id subsite_id	The location file can not be loaded without properly referenced sites (subsite_id).
Location	SiteNameDate. EPAID. EPAR2LOC_v1. txt (or csv)	US EPA data provider's surveyor	One entry for each location on a study site. Contains elevation, coordinate and general data. Data should only be reported once for a location.	station_id	Samples, water levels, and field measurements can only be reported for locations that are defined in this file.
Data provider	SiteNameDate. EPAID. EPAR2DP_v1. txt (or csv)	US EPA data provider	One entry for each company or agency responsible for completion, and submission of any part of the EDD. Contains contact information including name, address, telephone, email.	data_provider	Location, field results, and sample info can only be reported for data providers that are defined in this file.

Table 2-2. General information on the files that comprise the Chemistry EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Chemistry Field Results	SiteNameDate. EPAID. EPAR2CFM_v1. txt (or csv)	US EPA data provider's field sampling team(s).	Measurements taken in field (*e.g.*, air temperature).	field_msr_id param_code	None.
Chemistry Sample Info	SiteNameDate. EPAID. EPAR2SMP_v1. txt (or csv)	US EPA data provider's field sampling team(s).	One row for each sample collected at the study site.	sample_id	Tests/results data can only be reported for samples that are defined in this file.
Chemistry Test/Result with QC Data	SiteNameDate. EPAID. EPAR2TRSQC_v1. txt (or csv)	US EPA data provider's testing lab(s). Required for Superfund	One row for each analyte reported for a given sample and test. Additional rows can be added to report total and dissolved results and to report results for re-extracts.	sample_id lab_anl_method_ code fraction test_type cas_number analysis_date analysis_time	None
Sample Collection Procedures	SiteNameDate. EPAID. EPAR2SCP_v1. txt (or csv)	US EPA data provider's field sampling team(s).	Description and citation for collection methods	sample_coll_proc _id	Samples can only be reported if collection procedure ID is defined in this file.

Table 2-2. General information on the files that comprise the Chemistry EDD (continued)

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Water Level	SiteNameDate. EPAID. EPAR2GWTR_v1. txt (or csv)	US EPA data provider's field sampling team(s)	Groundwater level data for monitoring wells	station_id well_id measurement_date measurement_time	None.

Table 2-3. General information on the files that comprise the Geology EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Lithology	SiteNameDate. EPAID. EPAR2LTH_v1. txt (or csv)	US EPA data provider's Geologist	Lithology data for a borehole.	station_id start_depth	None.
Well	SiteNameDate. EPAID. EPAR2WEL_v1. txt (or csv)	US EPA data provider's Geologist	general information regarding wells	station_id well_id	Well Construction data can only be reported for wells that are defined in this file.
Well Construction	SiteNameDate. EPAID. EPAR2WSG_v1. txt (or csv)	US EPA data provider's Geologist	Well construction details recorded during well construction.	station_id well_id segment_type start_depth construction_ material	None.

2.2 Initial Data Submittals

The initial data submittal consists of a site base map and three data files: Site File, Location File and Data Provider File. Initial submittals provide information pertaining to the monitoring site and sampling locations within the site. The base map, Site file, Location file and Data Provider file need only be submitted once at the beginning of the project and resubmitted only when changes occur. Examples of changes that would require a resubmission include a change in the site contact or locations being resurveyed. New sampling locations established after the initial Location file submittal requires a new submittal with data only pertaining to the new locations. Instructions for submitting your EDDs to EPA are presented in Section 2.16 Submitting Your EDD to EPA.

2.3 Chemistry Data Submittals

There are two (2) types of Chemistry data submittals: Recurring and Correction.

- Recurring submittals are submitted on a cyclic basis and should include the files: Field Results, Chemistry Sample, Test/Results, and Water Level. Data should not be reported for laboratory generated quality control samples but should be reported for field duplicates, field blank, field spike, and trip blanks.
- Correction Reports are those files submitted to correct previously submitted reports. Laboratory retests should be reported as discussed in Section 2.10.

Instructions for submitting your EDDs to EPA are presented in Section 2.16 Submitting Your EDD to EPA.

2.4 Geology Data Submittals

Sites reporting data from monitoring wells are required to submit the Geology tables. All applicable Geology files must also be submitted for data collected via direct push sampling (*e.g.*, geoprobe).

There are two (2) types of Geology data submittals: Original and Correction:

- Original submittals consist of Geology data obtained during subsurface investigations at the site. The original Geology submittal should consist of all Geology files if the data are available. Unlike the Chemistry EDD submittals which are submitted on a cyclic basis, in most cases the Geology EDD is submitted only once. An additional Geology EDD is submitted only if new geology data are obtained after the original EDD was submitted to the EPA.
- Correction submittals are those files submitted to correct errors from previously submitted EDDs.

Instructions on submitting your EDDs to EPA are presented in Section 2.16 Submitting Your EDD to EPA.

2.5 File Naming Convention

Each file, except the base map file, must be named according to the following convention: SiteNameDate.EPAIDCode.EDD File Format.txt (or .csv)

For example, the ground water sampling for data submitted at the ABC site, EPA Site XYZ123456789 on February 19, 2002, would be reported in a file named ABC20020219.XYZ123456789.EPAR2SMP_v1.txt (or .csv). The first part of the file name is the site name and submission date in YYYYMMDD format. The second part of the file name is the 12 character alphanumeric EPA ID for the facility under investigation. The third part of the file name refers to the EDD file format for the file being submitted. In the above example, the Chemistry sample file is being submitted, therefore the EDD File format is EPAR2SMP_v1. The last part is an extension that will be either "txt" if the file was saved as tab delimited or "csv" if saved as comma delimited. Table 2-4 describes the naming formats and submission type for the Initial, Chemistry and Geology files.

Table 2-4. EDD file name formats

File Type	File Contents	EDD File Name	Submission Type
Initial	Base Map	Sitename.DXF	Initial
Initial	Site	SiteNameDate.EPAIDCode.EPAR2SITE_v1.txt	Initial
Initial	Location	SiteNameDate.EPAIDCode.EPAR2LOC_v1.txt	Initial
Initial	Data Provider	SiteNameDate.EPAIDCode.EPAR2DP_v1.txt	Initial
Chemistry	Field Results	SiteNameDate.EPAIDCode.EPAR2CFM_v1.txt	Recurring
Chemistry	Sample	SiteNameDate.EPAIDCode.EPAR2SMP_v1.txt	Recurring
Chemistry	Test/Results QC	SiteNameDate.EPAIDCode.EPAR2TRSQC_v1.txt	Recurring
Chemistry	Water Level	SiteNameDate.EPAIDCode.EPAR2GWTR_v1.txt	Recurring
Chemistry	Sample Collection Procedures	SiteNameDAte:EPAIDCode EPAR2SCP_v1.txt	Recurring
Geology	Lithology	SiteNameDate.EPAIDCode.EPAR2LTH_v1.txt	Original
Geology	Well	SiteNameDate.EPAIDCode.EPAR2WEL_v1.txt	Original
Geology	Well Construction	SiteNameDate.EPAIDCode.EPAR2WSG_v1.txt	Original

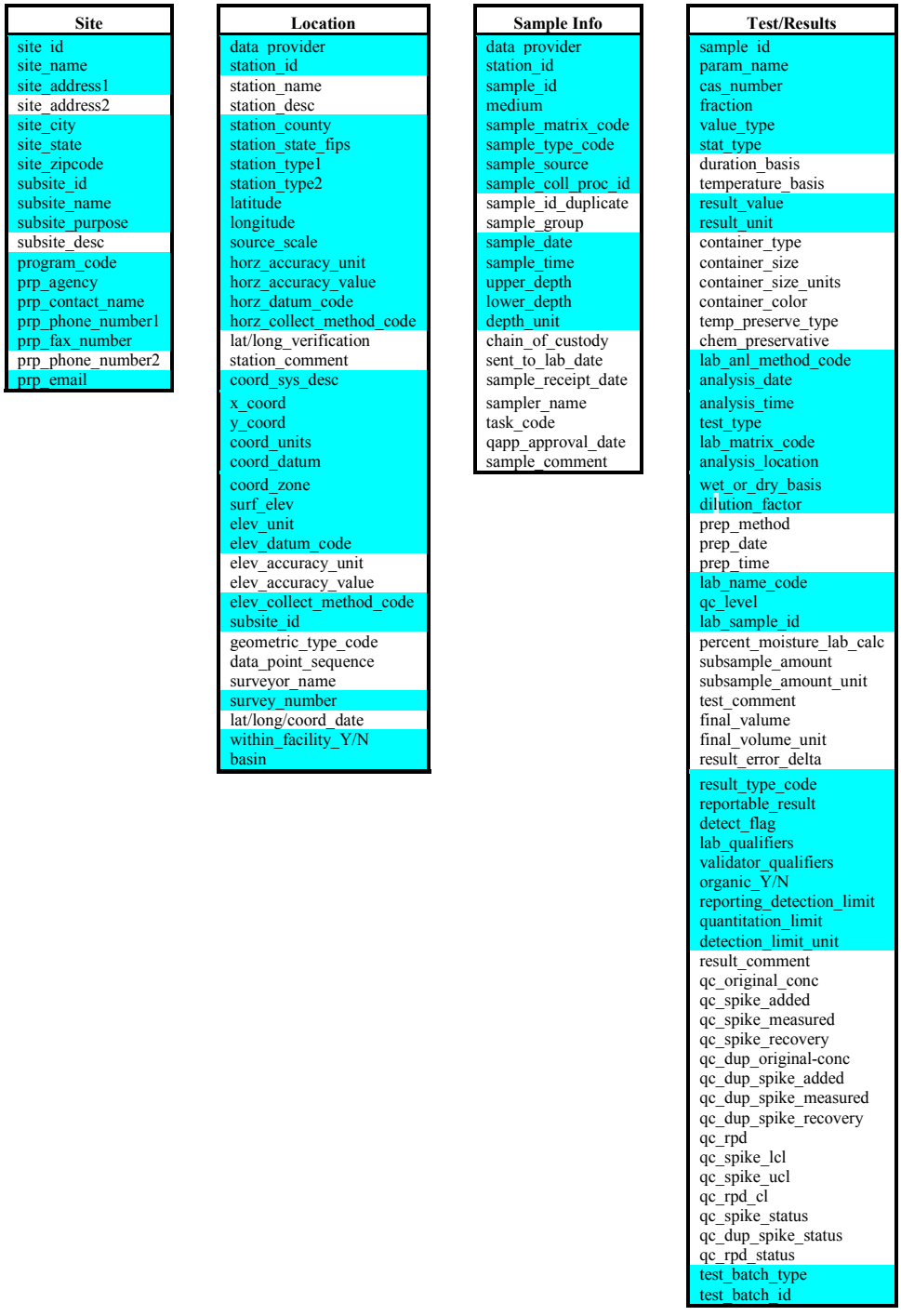
2.6 Data Integrity Rules

Data submitters are responsible for running three types of integrity checks on their data.

- **Validity:** All codes used in a data set must be valid. Valid values for all coded fields are either provided in the description columns of the tables in Sections 3, 4, and 5 or, for more extensive lists, provided in the appendix. For example, the sample matrix is sample_matrix_code field of the sample file and must be reported using one of the values provided in Appendix 7-16.

- **Row Uniqueness** must be verified using the guidance provided in Tables 2-1, 2-2, and 2-3. Row uniqueness is assured when no two rows in a file contain the same values for the columns listed under the heading "What makes a row of data unique?" In database terminology this is called a primary key. For example, no two rows in the sample file can contain the same sample_id (commonly called a sample identifier). In addition, no two rows ever reported for a single site can contain the same sample_id. The sample_id must be unique for a site. This is also true of the station_id (code used to identify a location e.g. MW01) in the Location table. As previously mentioned, it is anticipated that the location(s) will be reported early in the program and that information about each location including water levels and samples collected will be reported throughout the program. In this case, a row for each station_id should only be reported in the Location file with the first data submission and not with subsequent submissions.

Figure 2-1. Relationships between chemistry file data structures.



Note that the field results table is not shown. Shaded fields are required to have data

- **Row Integrity:** The relationship between rows within the files of the EDD must be assured by enforcing the "referential integrity" rules discussed in Tables 2-1, 2-2, and 2-3 under the column labeled "Dependence of other files on these data." For example, the values of sample_id present in the Test/Result file must also be present in the Sample file. Logical relationships between the Chemistry files are shown in Figure 2-1 above. The line between files shows which column (or columns) is used to relate the two. The side with the "1" at the end of the line contains one row that is related to many rows on the other side. For example, there is one site row for many location rows because there are many locations at each of the study sites. Logical relationships between the Geology files are limited to the requirement that all station_ids be reported in the Location table.

2.7 Definition of a Facility, Site, and Location

It is important to understand how this EDD defines a site, subsite, and location. Each site (site_id) will be identified with its EPA ID number. The subsite (subsite_id) will be a subdivision of the site (*i.e.*, operable unit identifier, area of concern (AOC), or solid waste management unit (SWMU)) and there is at least one per site. Each subsite can contain one or more locations that are distinct points defined by an X and Y Universal Transverse Mercator (UTM) coordinate. Examples of locations include soil borings, monitoring wells, and sampling locations. Each location identifier (station_id) must be unique for a site. Figure 2-2 provides a diagram of the facility components.

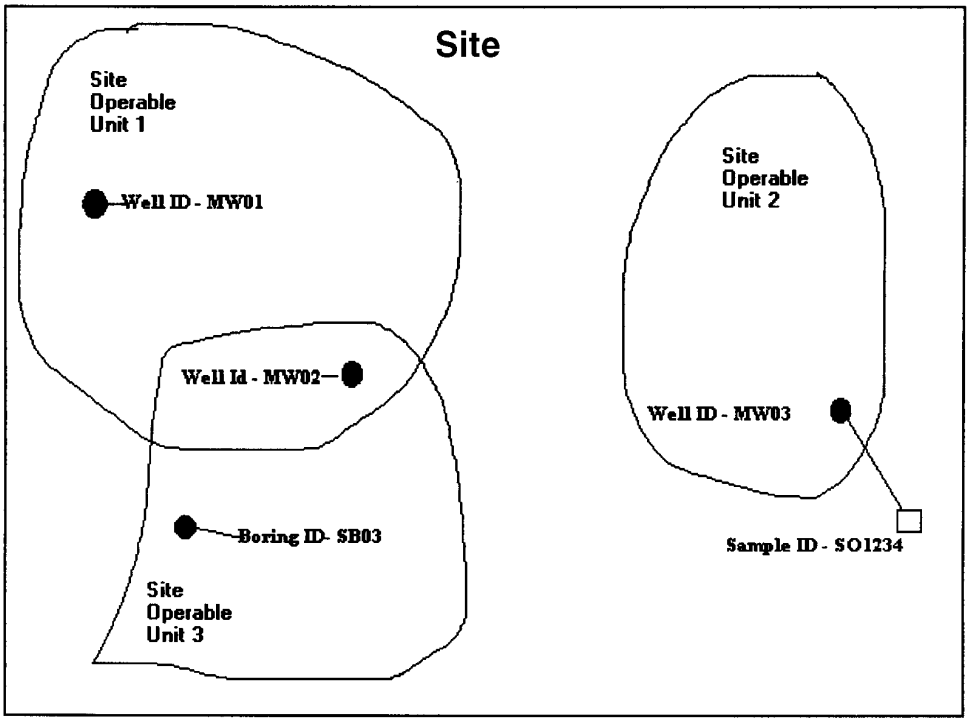
For purposes of mapping to Storet data requirements, the site is equal to an organization in Storet. A subsite (operable unit, AOC, SWMU) is analogous to a Storet project. And a location is the same as a station in Storet.

2.8 Reporting Null Values

Many fields are optional in this EDD specification. When a field is <u>not</u> listed as required in Sections 3, 4, and 5, a null or blank may be appropriate. However, the blank value must still be surrounded by tabs or commas. In other words, the number of fields is always the same, whether or not the fields include data. Refer to Table 2-5 where the second of three fields shown is considered optional.

Table 2-5. Examples of how to report null values

Example	Comment
"data_one"->*"data_two "->*"data_three" "data_one","data_two","data_three"	O.K. All fields populated, one tab or comma between fields.
"data_one"->*->*"data_three" "data_one",,"data_three"	O.K. Optional field not populated, 2 tabs or 2 commas between first and third field.
"data_one"->*"data_three" "data_one","data_three"	Not O.K. Optional field omitted, only 1 tab or comma between first and third field.



E ID #

Subsite = Site Operable Unit, AOC or SWMU = subsite_id
Must be unique at a Site

Location = sample location, Well ID, Boring ID = station_id
Must be unique at a Site

Data for a location may be reported for more than one Site Operable Unit, AOC or SWMU.

Figure 2-2. Site component definitions

2.9 Valid Values

Valid values, also known as reference values or code lists, govern the contents of some fields in the database. In other words, some fields may contain only those values within a certain predetermined range or list of codes. A full list of columns that reference valid values is presented in Table 2-6. This list is also cross-referenced to the file structures presented in Sections 3, 4, and 5. If you require the addition of valid values to any of the tables listed below, contact the data management staff using the contact information provided in the technical support section.

Table 2-6. Cross-reference between the valid value tables in appendix and the EDD files

Valid Value Table	Appendix Sect.	Column	EDD File
Basin	7.1	basin	Location
Chemistry Preserve	7.2	chem_preservation	Test/Results
Container Color	7.3	container_color	Test/Results
Container Type	7.4	container_type	Test/Results
Duration Basis	7.5	duration_basis	Test/Results
Elevation Collection Method	7.6	elev_collect_method_code	Location
Elevation Datum Code	7.7	elev_datum_code, reference_point_datum_code	Location, Well
Equipment Name	7.8	field_msr_eqipment_name	Field_results
Equipment Type	7.9	field_msr_equipment_type	Field_results
Fraction	7.10	fraction	Test/Results
Gear Name	7.11	sample_coll_proc_name	Sample_collect_ procedures
Horizontal Collection Method	7.12	horiz_collect_method_code	Location
Horizontal Datum Code	7.13	horiz_datum_code, coord_datum	Location
Laboratory Analysis Method	7.14	lab_anl_method_name	Test/Results
Laboratory Name	7.15	lab_name_code	Test/Results
Material	7.16		
Matrix	7.17	sample_matrix_code, lab_matrix_ code, field_matrix_code	Chemistry Sample, Test/results, Field_ results
Parameter Name	7.18	param_name, cas_number	Field_results, Test/Results
Preparation Method	7.19	prep_meth	Test/Results
Program Code	7.20	program_code	Site
Qualifier	7.21	lab_qualifiers, validation_qualifiers	Test/Results
Sample Type	7.22	field_msr_type, sample_type_code	Field_results, Chemistry Sample
Source Scale Code	7.23	source_scale	Location
State Code	7.24		
Station County Code	7.25	state_code, station_state_fips	Site Location
Station Type 1	7.26	station_type1	Location
Station Type 2	7.27	station_type2	Location
Statistics Type	7.28	stat_type	Field_results Test/Results
Temperature Basis	7.29	temperature_basis	Test/Results
Temperature Preservation Type	7.30	temp_preserve_type	Test/Results
Unit	7.31	depth_unit, result_unit, subsample_amount_unit, container_size_units, coord_units, detect_limit_unit, reference_point_unit, slot_size_unit, stickup_unit, sump_unit, diameter_unit, horz_accuracy_unit	Chemistry Sample, Location, Test/Result, Well Construction, Well, Water Level, Field Results
Well Construction Material	7.32	segment type, construction material	Well Construction

2.10 Reporting Re-tests

For Initial tests, all analytes should be reported. For retests only reportable chemicals should be reported. The initial test will have reportable_result set to "No" for all chemicals that are reported in retests. Table 2.7 provides an example of reporting re-tests.

Table 2-7. Example of reporting re-tests

Test Type	Chem Name	Cas rn	Result Value	Detect Flag	Lab Qualifiers	Reportable Result	Result_ Comment
initial	Benzene	71-43-2	1000	Y	E	No	too concentrated to quantify
initial	Toluene	108-88-3		N	U	Yes	not detected
initial	Xylenes	1330-20-7		N	U	Yes	not detected
dilution1	Benzene	71-43-2	780	Y		Yes	quantified

2.11 Reporting Non-detects

Non-detects must be reported as shown in the example below. Each non-detect row must have the detect_flag = N, a reporting_detection_limit, and null in the result value field. Table 2.8 presents an example of reporting non-detects.

Table 2-8. Example of reporting non-detects

Cas rn	Result Value	Detect Flag	Reporting Detection Limit	Detection Limit Unit	Result_ comment	Laboratory_ qualifiers
108-88-3	.15	Y	.005	ug/ml		
108-88-3		N	.005	ug/ml	not detected	U

2.12 Reporting Tentatively Identified Compounds

Tentatively Identified Compounds (TICs) should be reported where available. The naming of TICs should be applied in a cascade fashion. The TIC should be identified to analyte name if possible. If this is not possible, then the TIC should be identified to class. As a final naming choice, the TIC should be identified as Unknown. For the purpose of this EDD, the valid values list assumes the laboratory will report up to 10 TICs. Only the 10 most concentrated TICs should be reported. Table 2-9 shows examples of the nomenclature for TICs. As an example, if a sample has three Unknown Hydrocarbons, then the TICs are labeled UnkHydrocarb1, UnkHydrocarb2, and UnkHydrocarb3. TIC names are to be reported in the cas_rn field, Pos #31, of the Test/Result file (Tables 4-3 and Table 4-4). In addition, the result_type_code, Pos # 35 in the Test/Result file should have “TIC” for all TIC records.

Table 2-9. Example nomenclature for TIC reporting

TIC Name	Number for TIC	Reported Name in cas_rn
Unknown	1-10	Unknown1 – Unknown10
Unknown Hydrocarbon	1-10	UnkHydrocarb1 - UnkHydrocarb10
Unknown PAHs	1-10	UnkPAH1 - UnkPAH10
Unknown Aromatics	1-10	UnkAromatic1 - UnkAromatic10
Unknown VOA	1-10	UnkVOA1 - UnkVOA10
Unknown SV	1-10	UnkSV1 - UnkSV10

2.13 Data Types

The table below describes the data types used in the chemistry and geology file descriptions. In addition to the types listed below, certain fields have single and double data types. The single data type stores number from –3.402823E38 to –1.401298E–45 for negative values and from 1.401298E–45 to 3.402823E38 for positive values, with decimal precision of up to 7. The double data type stores numbers from –1.79769313486231E308 to –4.94065645841247E–324 for negative values and from 1.79769313486231E308 to 4.94065645841247E–324 for positive values, with decimal precision of up to 15.

Table 2-10. Data type descriptions

Type	Description	Decimal Precision	Comments
Integer	Stores numbers from –32,768 to 32,767 (no fractions).	none	
'Y' or 'N'	Boolean field used to indicate yes or no to a question. Enter either Y or N.	NA	
Time	Time in 24-hr (military) HH:MM format.	NA	Text(5) is standard length for time.
Date	Date format is MM/DD/YYYY.	NA	
Text	Stores characters and numbers.	NA	Length restrictions are indicated in parenthesis.

2.14 Data Entry Tools Provided to Create the EDD Files

The files can be produced using any software with the capability to create text files. These files are especially easy to create using spreadsheet or database software packages. However, if these are unavailable, the files can be created using a word processor or text editor. Table 2-11 provides instructions for creating tab delimited text files from some of the more popular software packages.

Table 2-11. Instructions for producing tab delimited text files from some popular software packages

Package	Type	Instructions
Access 97	Database	1. Create tables using file structures in Sections 3 and 4. 2. After data are entered, close table. 3. Click on table name (under table tab) and then select "File," "Save As" from the top menu. Save to an external file or database. Change "Save as Type" to a text file. Change the file extension from "txt" to "tab." Press OK. This will start the export wizard. 4. In the export wizard, select "Delimited," then press the "Next" button. Select "Tab" as the delimiter type and " as the text qualifier. Press the "Next" button. Select a destination and name for the file. Press the "Finish" button.
Excel 97	Spreadsheet	1. Select "File," "Save As" from the top menu. Change "Save as Type" to a "Text (Tab Delimited)" file. Press the "Save" button.
Quattro® v8	Spreadsheet	1. Select "File," "Save As" from the top menu. Change the "File Type" to "ASCII Text (Tab Delimited)." Press the "Save Button."
Word 97	Word Processor	Warning: A word processor is not the best tool for the job! A large paper size will have to be selected to prevent wrapping for most files. 1. Enter data into a table in Word. Any text entered must be contained within double quotes. 2. Select "Table," "Insert Table" from the top menu. When the table is highlighted, select "Table," "Convert Table to Text," "Separate Text with Tabs." 3. Select "File," "Save As" from the top menu. Change "Save as Type" to "MS DOS Text (*.txt).
Lotus 1-2-3	Spreadsheet	1. Select "File," "Save As" from the top menu. Change "Save as Type" to a "Comma Separated Value (CSV)" file. Provide file name. Press the "Save" button.

Several files are available from EPA's project contact to assist in creating the chemistry and geology EDDs.

- Three Microsoft Excel Workbooks files named EPAR2ChemEDD, and EPAR2GeoEDD provide electronic templates for the EDD files. To create an EDD, simply enter your data into the worksheets provided and then follow the instructions to create a tab delimited text file. The valid value tables are also included within the spreadsheets.
- Two Microsoft Access database files, EPAR2ChemEDD.mdb and EPAR2GeoEDD.mdb also provide electronic templates for the EDD files. To create an EDD, simply enter your data into the database files provided and then follow the instructions to create a tab delimited text file.

2.15 Using the Electronic Data Checkers to Validate EDDs

The Electronic Laboratory Data Checker (ELDC) and Electronic Field Data Checker (EFDC) are used to check the EDD files prior to submittal. The ELDC is used to check the following four Chemistry files: chemistry sample, chemistry test/results, chemistry test/result with QC data, and batch. The EFDC is used to check the remaining EDD files.

The ELDC and EFDC installation files are provided as EPAR2_ELDCSetup.EXE and EPAR2_EFDCSetup.EXE. To install ELDC and EFDC, simply double-click on the files and follow the installation instructions. Once ELDC and EFDC are installed on a workstation, they may be used to check the EDD files prior to reporting to EPA.

When the ELDC starts, the user needs to select the EDD file format associated with the type of file that will be checked (*i.e.*, EPAR2SMP_v1 for the chemistry sample file). Table 2-12 shows the correlation between ELDC "EDD file format" and the file types used in the EDD. Next the actual file is selected by using a standard browse function. Finally, the "Check" button is clicked to begin the checking process.

Table 2-12. Correlation between ELDC EDD file formats and chemistry EDD file types

ELDC EDD File Format	Chemistry EDD File Type
EPAR2SMP_v1	Chemistry Sample
EPAR2TRSQC_v1	Chemistry Test/Result with QC Data

When the EFDC starts, the user needs to select the EDD file format associated with the type of file that will be checked (*i.e.* EPAR2SITE_v1 for the site file). Table 2-13 shows the correlation between EFDC "EDD file format" and the file types used in the EDD. Next the actual file is selected by using a standard browse function. Finally, the "Check" button is clicked to begin the checking process.

Table 2-13. Correlation between EFDC EDD file formats and EDD file types

EFDC EDD File	Format EDD File Type
EPAR2SITE_v1	Site
EPAR2LOC_v1	Location
EPAR2GWTR_v1	Water Level
EPAR2LTH_v1	Lithology
EPAR2WEL_v1	Well
EPAR2WSG_v1	Well Construction

If there are errors or warnings an error log is created that can be viewed in detail or summary mode to gain an understanding of the problem. After the errors are corrected, the ELDC and EFDC can be re-run to assure that no errors remain. If error messages remain because new valid value codes are required, the files should be considered clean and reported to EPA with the new codes clearly explained in the cover letter.

2.16 Submitting Your EDD to the EPA

Once the EDD files are complete and ready to submit, the following steps should be taken to assure a streamlined process. Each EDD must be accompanied by a cover letter (please include as electronic text file on diskette as well) that specifies the study site, contact for technical questions, file names, any exceptions to the EDD format, and a clear notification if the EDD contains previously submitted data. If data are being resubmitted, please indicate the reason for resubmission and provide guidance on how to handle the original data (e.g., delete it from the database). Files should not be compressed. Completed EDDs should be sent on a 3.5" IBM-compatible diskette, CDROM, or 100 MB/250MB Zip® Disk that is clearly labeled with the project code and date of transfer to the applicable EPA contact, usually the project manager.

In lieu of disk copy, email submissions may be arranged with the EPA Project Manager.

2.17 Example of a Typical Initial, Chemistry and Geology EDD Deliverable

Examples of Initial, Chemistry and Geology EDD files populated with the first few rows of a typical data set are presented in Figures 2-3, 2-4, 2-5, and 2-6. In order to fit the examples on one page, not all of the fields (*i.e.*, columns) were included for certain files (e.g., Site, Location, Chemistry Sample). *Additional Fields* is denoted where all the fields are not included. It should be noted that all fields are required when submitting EDD files, regardless of whether or not the field is populated (see Section 2.9). The special cases discussed in previous sections are illustrated here together with standard examples.

Figure 2-3. Example Initial EDD ready for conversion to text file

Site File:

site_id	subsite_name	site_address1	*Additional Fields*	subsite_id	*Additional Fields*	prp_contact_ name	*Additional Fields*	prp_email
FAC123456723	Example Site	23 Main Street		Example		John Smith		abc@abd.com

Data Provider File:

data_provider	data_contact_ name	data_contact_ address1	data_contact_ address2	data_contact_ city	data_contact_ state	data_contact_ zipcode	data_contact_ email	data_contact_ phone
ABC Consultants	Smith_John	5 Front Street		Greenville	NY	01111	smith@ABC.com	(800) 555-1111

Location File:

data_provider	station_ id	*Add'l Fields*	latitude	longitude	*Add'l Fields*	coord_sys_ desc	x_coord	y_coord	*Add'l Fields*	surf_ elev	elev_ units	*Add'l Fields*	lat/long/ coord_ date
ABC Consultants	MW-01		-82.00231	39.9612		UTM Zone 17	414456.78	4424543.21		120.2	ft		02/21/1999
ABC Consultants	SB-01		-82.00531	39.35794		UTM Zone 17	414709.23	4424304.12		126.3	ft		02/23/1999
AbC Consultants	MW-3a		-82.01023	39.9701		UTM Zone 17	414601.23	4424700.33		130.1	ft		01/22/1999

Figure 2-4. Example Chemistry EDD ready for conversion to text file

Chemistry Field Results File:

data_ provider	station_id	field_msr_id	field_msr_ type	medium	field_matrix_ code	measurement_ date	measurement_ time	upper_depth	*Additional Fields*	param_ name	value_type
ABC Consultants	MW01	11/26/2001/08: 30:00/MW 01	N	Water	WG	11/26/2001	08:30:00	5		pH	Actual

Chemistry Field Results File (continued):

stat_type	result_value	result_unit	*Additional Fields*	calibration_ date
	7.2	pH units		

Sample File:

data_ provider	station_ id	sample_ id	medium	sample_ matrix_ code	sample_ type_code	sample_ source	*Additional Fields*	sample_ date	sample_ time	*Additional Fields*	sample_ comment
ABC Consultanats	MW01	MW01040198	Water	WG	N	Field		04/01/1998	08:24:00		
ABC Consultants	MW02	MW02040198	Water	WG	N	Field		04/01/1998	10:05:00		

Test/Result File:

sample_id	param_ name	cas_ number	fraction	value_ type	*Additional Fields*	result_ value	result_ unit	*Additional Fields*	test_ type	lab_matrix_ code	analysis_ location	wet_or_dry_ basis
MW 02040198	Benzene	71-43-2	T	Actual		12	ug/ml		Initial	WG	LB	Wet
MW02040198	Toluene	108-88-3	T	Actual			ug/ml		Initial	WG	LB	Wet
MW02040198	Xylenes	1330-20-7	T	Actual		10	ug/ml		Reanalysis	WG	LB	Wet

Test/Result file (continued):

dilution_ factor	*Additional Fields*	result_type_ code	reportable_ result	detect_fla g	lab_qualifiers	validator_ qualifiers	organic_Y/N	*Additional Fields*	test_batch_id
1.0		TRG	Y	Y			Y		
1.0		TRG	Y	N	U	U	Y		
10.0		TRG	Y	Y			Y		

Figure 2-4. Example Chemistry EDD ready for conversion to text file (continued)

Chemistry Water Level File:

station_id	well_id	measurement _date	measurement _time	water_level_ historic_ref_ elev	water_level_ depth	water_level_ elev	water_level_ depth_ corrected	*Additional Fields*	water_level_ remark
MW01	Well-A	05/10/1999	13:10		31.1	89.1			
MW02	Well-B	05/10/1999	13:45		34.1	89.0			

Figure 2-5. Examples of QC data fields within Chemistry EDD

QC fields in a normal field sample (*i.e.*, sample_type_code = N, TB, etc.)

The following table shows some of the fields in the test/result file for a normal field sample. Notice that all QC fields are blank.

param_name	result_value	qc_original_ conc	qc_spike_ added	qc_spike measured	qc_spike_ recovery	qc_dup_ original_conc	qc_dup_ spike_added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5	1.56								
94-75-7	3.17								
94-82-6	2.31								

QC fields in a normal field sample with surrogates (*i.e.*, sample_type_code = N, TB, etc.)

The following table shows some of the fields in the test/result file for a normal field sample. Notice that QC fields are blank except on surrogate rows. Many users will need only the recovery field data; the spike added and spike measured fields will not be needed in most situations.

param_name	result_value	result_unit	result_type_code	qc_original_conc	qc_spike_added	qc_spike_ measured	qc_spike_ recovery
93-76-5	1.56	mg/l	TRG				
94-75=7	3.17	mg/l	TRG				
PHEN2F		mg/l	TRG		12.5	12.9	103

Figure 2-5. Examples of QC data fields within Chemistry EDD (continued)

QC fields in a laboratory method blank sample (*i.e.*, sample_type_code = LB)

The following table shows some of the fields in the test/result file for a laboratory method blank sample. Notice that all QC fields are blank.

param_ name	result_valu e	lab_ qualifiers	qc_ original_ conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	qc_dup_ original_ conc	qc_dup_ spike_ added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5		U								
94-75-7		U								
94-82-6	0.01									

QC fields in a matrix spike (*i.e.*, sample_type_code = MS*)*

The following table shows some of the fields in the test/result file for a matrix spike sample. Notice that all "dup" QC fields are blank, and that the result_value field is not needed. Also, the qc_rpd field would be blank for these rows. Many users will need only the calculated recovery field (qc_spike_recovery).

param_ name	result_ value	qc_ original_ added	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	qc_rpd	qc_dup_ original_ conc	qc_dup_ spike_ added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5		1.56	4.18	5.36	90.9					
94-75-7		3.17	4.18	7.15	95.2					
94-82-6		2.31	4.22	5.66	79.3					

QC fields in a matrix spike duplicate (*i.e.*, sample_type_code = SD*)*

The following table shows some of the fields in the test/result file for a matrix spike duplicate sample. Notice that all "dup" QC fields are completed, and that the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. Many users will need only the calculated recovery field (qc_dup_spike_recovery).

param_ name	result_ value	qc_original_ conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	qc_rpd	qc_dup_ original_conc	qc_sup_ spike_added	qc_dup_ spike_ measured	qc_dup_ spike_ recovery
93-76-5						10	1.56	4.23	5.70	97.8
94-75-7						12	3.17	4.23	7.62	105
94-82-6						15	2.31	4.13	5.33	73.1

Figure 2-5. Examples of QC data fields within Chemistry EDD (continued)

QC fields in a matrix spike/matrix spike duplicate (*i.e.*, sample_type_code = MSD)

The following table shows some of the fields in the test/result file for a matrix spike/matrix spike duplicate considered as single sample (they can be reported this way, or as two separate samples as shown above). Notice that all QC fields are completed, and that the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. Many users will need only the calculated recovery fields (qc_spike_recovery and qc_dup_spike_recovery).

param_ name	result_value	qc_ original_ conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	qc_rpd	qc_dup_ original_ conc	qc_dup_ spike_ added	qc_dukp_ spike_ measured	qc_dup_ spike_ recover
93-76-5		1.56	4.18	5.36	90.9	7	1.56	4.23	5.70	97.8
94-75-7		3.17	4.18	7.15	95.2	10	3.17	4.23	7.62	105
94_82-^		2.32	4.22	5.66	79.3	8	2.31	4.13	5.33	73.1

QC fields in a LCS (*i.e.*, laboratory control sample, blank spike, sample_type_code = BS)

The following table shows some of the fields in the test/result file for a LCS sample. The qc_rpd field would be blank for these rows. Many users will need only the calculated recovery field (qc_spike_recovery). LCS duplicate samples (*i.e.*, sample_type_code = BD) and LCS/LCSD samples (*i.e.*, sample_type_code = BSD) follow the patterns similar to the SD and MSD samples described above.

param_ name	result_value	qc_original_ conc	qc_spike_ added	qc_spike_ measured	qc_spike_ recovery	qc_dup_ original_conc	qc_dup_ spike_added	qc_dup_ spike_ measured	qc_dup_ spike__ recover
93-76-3			5.00	5.26	105				
94-75-7			1.00	1.02	102				
94-82-6			12.5	12.9	1-3				

Figure 2-6. Example Geology EDD for new monitoring wells or direct push samples ready for conversion to text file

Lithology File:

station_id	start_depth	material_type	consolidated_ Y/N	geo_unit_1	*Additional Fields*	litholog_remark
W-1A	0	CL	N	Clay		grayish brown clay, trace fine sand, med strength, med plastic, rapid dilatancy, some brick fragments
W-1A	10	SW	N	Pitwasj		med dense, 50% fine to coarse brown sand, 30% gravel, dry, trace clay
W-1A	23	SP	N	Outwash		dense, 70% coarse brown sand, 20% gravel, poorly graded, rounded, moise
W-2A	0	ML	N	Alluvial		dark brown silt with little fine sand, low strength, nonplastic, rapid dilatancy

Well File:

station_id	well_id	*Additional Fields*	top_casing_ elev	reference_ pont_elev	reference_ point_unit	reference_ point_desc	*Additional Fields*	well_remark
W-1A	Well-1A		122.0	122.0	ft	top of casing of well		
W-2A	Well-2A		122.3	122.3	ft	top of casing of well		

Well Construction File:

station_id	well_id	segment_type	construction_material	start_depth	end_depth	depth_unit	inner_diameter	*Additional Fields*	well_constr_ remark
W-1A	Well-1A	surface plug	concrete	0	1.5	ft	4.5		
W-1A	Well-1A	sannular backfill	neat cement grout	1.5	8	ft	2.375		
W-1A	Well-1A	annular seal	Bentonite pellets	8	8	ft	2.375		
W-1A	Well-1A	filter pack	sand pack	8	23.1	ft	2.375		
W-1A	Well-1A	protective casing	steel	-2.2	3.2	ft	4		
W-1A	Well-1A	casing	stainless steel 304	-2.1	24	ft	2		
W-1A	Well-1A	screen	statinless steel 304	24	29	ft	2		
W-2A	Well-2A	protective casing	steel	-2.0	1.53.0	ft	2		
W-2A	Well-2A	surface plug	concrete	0	1.5	ft	4.5		
W-2A	Well-2A	anular backfill	neat cement grout	1.5	10	ft	2.375		

3. FORMATS FOR INITIAL FILES

This section contains information regarding the base map and the three tables that define the file structures for the initial EDD. These files are initial files that need to be submitted to EPA prior to, or in conjunction with, the first Chemistry EDD or Geology EDD submission. These files need only be submitted once. The only time a site, location, or data provider file would be submitted more than once is if the data had changed in some way (e.g., contact name, location resurveyed) or if the site contains a new sampling location not previously submitted (e.g., new monitoring well installation). The columns marked "Required" must be reported for each row in the file. If they are not reported, the file will not load. Columns marked "If available" should also be reported.

3.1 Site Base Maps

Site base maps must be electronic CAD files in a DXF interchange format. The maps are to include all well locations, waste management units, landfills, buildings, and roads. Do not include any groundwater contours, contaminant contours, or other temporal type information. If the CAD file is available in real world locational coordinates, provide them along with a brief text description of the type of projection and datum used (UTM NAD 83 preferred). Also include text descriptions of the units and scale of the base map. The site base map file must be named according to the following convention:
SiteName.DXF

3.2 Site

Submitted once to define a site and provide the name, email address, and fax number of the main data contact. This file is required to be submitted as part of the initial EDD submittal. Each Site file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2SITE_v1.txt (or .csv)

Table 3-1. Site file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	site_id	Official EPA CERCLA ID, RCRA ID or valid STORET Organization ID if this data are not associated with a designated CERCLA site.	Text (20)	Yes	No
2	site_name	Name of site or facility.	Text (60)	Yes	No
3	site_address1	Site address, part one. Street address.	Text (40)	Yes	No
4	site_address2	Site address, part two. Box number or other info.	Text (40)	If available	No
5	site_city	City of site.	Text (20)	Yes	No

Table 3-1. Site file data structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
6	site_state	Postal abbreviation for State of site.	Text (2)	Yes	State_code table
7	site_zipcode	Zip code of site.	Text (10)	Yes	No
8	subsite_id	MAD Code Opt#9 Unique code for Operable Unit, SWMU, etc. Typically "01". Use "02", "03", etc, for additional units. Contact the EPA Project Manager if unsure of proper code. If there is only one subsite and it does not have an official label, please use 01.	Text (8)	Yes	No
9	subsite_name	Name of site, operable unit or sub-site name designated by sub_site_code. Name to appear on maps, graphs and tables identifying this subsite.	Text (60)	Yes	No
10	subsite_purpose	Reason for sampling at this operable unit or area.	Text (254)	If available	No
11	subsite_desc	Physical description of this operable unit or area.	Text (254)	If available	No
12	program_code	Code used to identify the program under which the operable unit or area is investigated. (RCRA, CERCLA, etc.)	Text (20)	Yes	Program_code table
13	prp_agency	Name of potential responsible party or equivalent.	Text (60)	Yes	No
14	prp_contact_name	Contact name for prp_agency.	Text (30)	Yes	No
15	prp_phone_number1	Phone number for prp_contact_name.	Text (60)	Yes	No
16	prp_fax_number	Fax number for prp_contact_name.	Text (60)	Yes	No
17	prp_phone_number2	Alternative phone number for prp_contact_name as defined by Region.	Text (60)	If available	No
18	prp_email	E-mail address for prp_contact_name.	Text (60)	Yes	No

3.3 Location

Submitted to define the sampling locations for a site. This file is required to be submitted as part of the initial EDD submittal. Each row contains the definition of a unique sampling location. In the case of multiple wells located in one borehole, each well must be treated as a separate sampling location and be assigned a unique location identifier, such as MW-01, MW-01a, etc. An example of this case is presented in the Location File of Figure 2-3.

Each sampling location should only be reported once for a site. The only time data for a previously reported location is to be resubmitted is if a change occurs at the location such as the location being resurveyed. If the location is resurveyed and changes result to the coordinates and datum elevations, a new location file should be submitted with the location identifier, and only the new record. The changes must be documented in an EDD submittal cover letter and the RPM should be notified.

This file data structure incorporates the requirements of EPA's Locational Data Management Policy (LDP). LDP requires geographic coordinates and associated method, accuracy, and description codes for all environmental measurements collected by EPA employees, contractors, and grantees. A key premise of this policy is that secondary use of these data in geographic information systems (GIS) and statistical mapping programs are significant to the overall mission of EPA. To facilitate the integration of data, EPA has established the LDP to standardize the coding of geologic coordinates and associated attributes. As a result, coordinates for each location must be reported in both universal transverse mercator (UTM) and in latitude and longitude with associated attributes.

Each Location file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2LOC_v1.txt (or .csv)

Table 3-2. Location file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	data_provider	Name of company or agency responsible for completion & submittal of any part of this EDD. Acts as a link to the Data_Provider table.	Text (60)	Yes	No
2	station_id	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. Examples of possible station_id are MW-01, SW-1, SB6, etc. Acts as a link to the sample table.	Text (20)	Yes	No
3	station_name	Sampling location name. May be longer description of station_id for organizations using long name formats.	Text (40)	If available	No

Table 3-2. Location file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
4	station_desc	Description of sampling location.	Text (254)	If available	No
5	station_county	Location county code.	Text (25)	Yes	Station_ county table
6	station_state_fips	Two letter state code of the location	Text (2)	Yes	State_ code table
7	station_type1	MAD Code Req#5 Primary sampling location type.	Text (20)	Yes	Station_ type1 table
8	station_type2	Secondary sampling location type.	Text (30)	Yes	Station_ type2 table
9	latitude	MAD Code Req#1Latitude of sampling location in decimal degrees (dd.xxxxxx).	Num (XX.XXXXXX)	Yes	No
10	longitude	MAD Code Req#2 Longitude of sampling location in decimal degrees. Must be negative for western hemisphere (-ddd.xxxxxx).	Num (XXX.XXXXXX)	Yes	No
11	source_scale	MAD Code Req#8 Scale of the source (map, air photo, etc.) used to determine the lat/long coordinates.	Text (10)	Yes	Source_ scale_code table
12	horz_accuracy_ unit	MAD Code Req#4B Use values in unit valid value table in appendix. Unit of the horizontal accuracy value.	Text (10)	Yes	Units table
13	horz_accuracy_ value	MAD Code Req#4A Accuracy range (+/-) of the lat/long coordinates. EPA Method Accuracy Description Code (MAD Code) Location Data Policy (LDP) requires that only the least accurate measurement be recorded, whether it is for longitude or latitude.	Num (XXXX.XXXX)	Yes	No
14	horz_datum_code	MAD Code Req#7 Reference datum used to determine the latitude and longitude measurements.	Text (3)	Yes	Horizontal_ datum_code table
15	horz_collect_ method_code	MAD Code Req#3 Method used to determine the latitude and longitude measurements.	Text (2)	Yes	Horizontal_ collect_ method code table

Table 3-2. Location file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
16	lat/long_ verification	MAD Code Opt#7 Indicates if the latitude and longitude has been verified by EPA staff, grantees or contractors through a given process. Indicate "Y" for yes and "N" for no.	Text (1)	If available	Valid values given in description
17	station_comment	MAD Code Opt#3A Comment about latitude, longitude and vertical elevation. Store information about the collection method, post processing of the data (if GPS were involved), or description of feature of the facility represented by the coordinates.	Text (254)	If available	No
18	coord_sys_desc	CART COORD 0 Cartographic sampling location coordinate system description for x_coord & y_coord. Valid Values = UTM, and SP (for State Plane).	Text (3)	Yes	No
19	x_coord	CART COORD 1A x coordinate in system specified by Agency requiring submittal. System identified by coord_sys_desc. Coordinates must be ready for plotting without shifts or off-sets.	Num (XXXXXXXXXX.XXXX)	Yes	No
20	y_coord	CART COORD 1B y coordinate in system specified by Agency requiring submittal. System identified by coord_sys_desc. Coordinates must be ready for plotting without shifts or off-sets.	Num (XXXXXXXXXX.XXXX)	Yes	No
21	coord_units	CART COORD 2 Units for cartographic coordinate system identified by coord_sys_desc.	Text (10)	Yes	Units table
22	coord_datum	CART COORD 3 Datum for cartographic xy coordinate system. May be different datum from horz_datum_code. Defaults to horz_datum_code if Null.	Text (3)	Yes	Horizontal_ datum_code table
23	coord_zone	CART COORD 4 Cartographic coordinate system zone. Indicate the UTM Zone or State Plane Zone.	Text (15)	Yes	No

Table 3-2. Location file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
24	surf_elev	MAD Code Req#6A Land surface elevation (in elev_unit) at station location. For surface water samples, use elevation of water surface. For sediment samples, use elevation of top of sediment.	Num (XXXXX.XXXX)	Yes	No
25	elev_unit	MAD Code Req#6B Unit of measurement for surf_elev. Valid values: m = meters & ft = feet.	Text (2)	Yes	Valid values given in description
26	elev_datum_code	MAD Code Opt#6 Datum for elevation measurements. Not same as reference_point_desc or reference_point_elev.	Text (3)	Yes	Elevation_datum_code table
27	elev_accuracy_unit	MAD Code Opt#5B Unit of the elevation accuracy value (in elev_unit). Valid values: m = meters & ft = feet.	Text (10)	If available	Valid values given in description
28	elev_accuracy_value	MAD Code Opt#5A Accuracy range (+/-) of the elevation measurement (in elev_accuracy_unit).	Num (XXXX.XXXX)	If available	No
29	elev_collect_method_code	MAD Code Opt#4A Method used to determine the land surface elevation of the sampling location.	Text (2)	If available	Elevation_collect_method table
30	subsite_id	MAD Code Opt#9 Unique code for Operable Unit, SWMU, etc. Typically "01". Use "02", "03", etc, for additional units. Contact the EPA Project Manager if unsure of proper code. If there is only only subsite and it does not have an official label, please use 01.	Text (8)	Yes	No
31	geometric_type_code	MAD Code Req#9 Usually Point for sample location data. Use Line or Area for GPS data describing road, railroad, pond edge, landfill perimeter, etc. Valid values: P = point, L = Line & A = area.	Text (10)	If available	Valid values given in description
32	data_point_sequence	MAD Code Opt#8 Number indicating the sequence in which points on a line or area are connected. Null if geometric_type_code = "P", required if geometric_type_code = "A" or "L". For an area, the maximum point is connected to the first.	Num (XXX)	If available	No

Table 3-2. Location file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
33	surveyor_name	MAD Code Opt#4B Name of surveyor company performing survey. Name of individual that collected the sample. FORMAT: COMPANY NAME, ADDRESS, CITY, STATE, ZIP CODE, SURVEYOR LASTNAME_SURVEYOR FIRSTNAME. NOTE use of "_" as a separator!	Text (254)	If available	No
34	survey_number	Unique identification of location survey history. Usually = 1 if location has been determined only once. May be 2 or more if location has been re-surveyed or re-determined.	Text (20)	Yes	No
35	lat/long/coord_ date	MAD Code Opt#2 Date location coordinates were determined.	Date MM/DD/YY YY	If available	No
36	within_facility_ Y/N	Indicates whether this sampling location is within facility boundaries. Enter "Y" for yes or "N" for no.	Text (1)	If available	Valid values given in description
37	Basin	Hydrologic basin; controlled vocabulary using HUC (Hydrologic Unit Codes). May be either 8 or 14 digit code.	Text (14)	Yes	Basin table

3.4 Data Provider

Submitted to define the contact informtion for an organization responsible for providing the data. This file is required to be submitted as part of the initial EDD submittal. If additional data providers are needed or the contact information for an existing data provider changes, this file should be resubmitted. Resubmissions should include only the new or changed records. The submittal cover letter should document the resubmission of these data. Each data provider file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2DP_vl.txt (or .csv)

Table 3-3. Data provider file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	data_provider	Name of company or agency responsible for completion & submittal of any part of this EDD.	Text (60)	Yes	No
2	data_contact_name	Name of contact associated with data_provider. FORMAT: LASTNAME_FIRSTNAME. NOTE use of "_" as a separator!	Text (30)	Yes	No
3	data_contact_address1	Contact street address and/or box number.	Text (40)	Yes	No
4	data_contact_address2	Site address, part two. Box number or other info.	Text (40)	Required, if applicable	No
5	data_contact_city	City of site.	Text (20)	Yes	No
6	data_contact_state	Postal abbreviation for State of site.	Text (2)	Yes	state_code table
7	data_contact_zipcode	Zip code of site.	Text (10)	Yes	No
8	data_contact_email	Contact e-mail address.	Text (60)	Yes	No
9	data_contact_phone	Contact phone number	Text (60)	Yes	No

4. FORMATS FOR CHEMISTRY FILES

This section contains tables that define the file structures for the Chemistry EDD. The file structures include field results, chemistry sample, test/result, water level, and sample collection procedures. The columns marked "Required" must be reported for each row in the file. If they are not reported, the data will not load. Columns marked "If available" should be submitted.

4.1 Chemistry Field Results

This file is used for *In situ* measurements taken in the field such as pH, conductivity, Eh, and dissolved oxygen, that are not associated with a physical sample but are associated with either a site or location. Also include measurements such as air temperature at the site. Data collected in the field that are associated with a sample, such as on site analysis using a mobile lab, should not be included in this file. Data associated with individual samples should be reported according to Section 4.2 and 4.3. Each Chemistry field measurement file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2CFM_v1.txt (or .csv)

Table 4-1. Chemistry field results file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	data_provider	Name of company or agency responsible for completion & submittal of any part of this EDD. Acts as a link to the Data_Provider table.	Text (60)	Yes	No
2	station_id	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. Examples of possible station_id are MW-01, SW-1, SB6, etc. Acts as a link to the Location table.	Text (20)	Yes	No
3	field_msr_id	Unique measurement identifier. Each measurement must have a unique value constructed in the following format from measurement_date, measurement_time, and station_id: MM/DD/YYYY/HH:MM:SS/station_id.	Text (40)	Yes	No
4	field_msr_type	Code which distinguishes between different types of measurements.	Text (3)	Yes	sample_ type_code table
5	medium	Medium within which this measurement was taken. Valid values: "Soil", "Water", "Air", "Sediment", "Biological".	Text (10)	Yes	Valid values given in description
6	field_matrix_ code	Code which distinguishes between different types of field measurement matrix.	Text (2)	Yes	Matrix table

Table 4-1. Chemistry field results file data structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
7	measurement_ date	Date of field chemistry measurement, water level measurement, etc.	Date MM/DD/ YYYY	Yes	No
8	measurement_t ime	Time of water level measurement, field chemistry, etc. in 24 hour (military) format.	Time (HH:MM)	Yes	No
9	upper_depth	Depth (in depth_unit) to top of measurement below land surface (surf_elev). Use for groundwater only if discrete measurements are taken at different depths in a single well (packer tests, etc.). Required for point measurements (direct push, etc.).	Num (XXXX. XXXX)	Yes	No
10	lower_depth	Depth (in depth_unit) to bottom of measurement below land surface (surf_elev). Use for groundwater only if discrete measurements are taken at different depths in a single well (packer tests, etc.). Null for point measurements (direct push, etc.).	Num (XXXX. XXXX)	Required if applicable	No
11	depth_unit	Unit of measure for depths.	Text (10)	Yes	Units table
12	param_name	Parameter names were derived from the Chemical Abstracts Registry (CAS) Number for the parameter if available. Otherwise EPA STORET codes were used.	Text (60)	Yes	Param_ name table
13	cas_number	Analyte code derived from the Chemical Abstracts Registry (CAS) Number for the parameter if available. Otherwise EPA STORET codes were used.	Text (15)	Yes	Param_ name table
14	value_type	Value type reflected in result_value. Valid values: "actual", "estimated" or "calculated".	Text (10)	If available	Valid values given in description
15	stat_type	Statistic type reflected in the result_value. Max, min, mean, etc. Leave null if no statistical value was used.	Text (20)	If available	stat_type table
16	result_value	The measured value of the parameter, result of analysis or test reported at an appropriate number of significant digits. May be blank for non-detects.	Text (20)	Yes	No
17	result_unit	Units of measurement for the result.	Text (15)	Yes	Unit table
18	field_msr_equip ment_type	Type of gear used to take the measurement.	Text (20)	If available	Equipment _type table
19	field_msr_equip ment_name	Name of the gear used to take the measurement.	Text (60)	If availabe	Equipment _name table

Table 4-1. Chemistry field results file data structure (continued)

Position	Field Data	Description	Data Type	Required?	Valid Values?
20	field_msr_comment	Any comment regarding this field measurement.	Text (254)	If available	No
21	worker_name	Name of individual that took the field measurement. FORMAT: LASTNAME_FIRSTNAME. NOTE use of "_" as a separator in this format! Order of entry is important for sorts and searches.	Text (30)	If available	No
22	calibration_date	Date that the field instrument used was last calibrated.	Date MM/DD/YYYY	If available	No

4.2 Chemistry Sample

The Chemistry sample file contains data for samples collected at a site and location. The unique identifier for each sample is recorded in the sample_id. Please record the sample_id as TB+date for trip blank samples. For example a trip blank collected on April 5, 2000 would have a sample_id of TB04052000. A sample_id of 'Trip Blank' is unacceptable because it cannot be distinguished from another trip blank labeled the same way. Each Chemistry sample file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2SMP_v1.txt (or .csv)

Table 4-2. Chemistry sample file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	data_provider	Name of company or agency responsible for completion & submittal of any part of this EDD. Acts as a link to the Data_Provider table.	Text (60)	Yes	No
2	station_id	'Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. Examples of possible station_id are MW-01, SW-1, SB6, etc. Acts as a link to the Location table.	Text (20)	Yes	No
3	sample_id	Unique sample identifier. Each sample must have a unique value, including spikes and duplicates. Laboratory QC samples must also have unique identifiers.	Text (40)	Yes	No
4	medium	Medium within which this measurement was taken. Valid values: "Soil", "Water", "Air", "Sediment", "Biological".	Text (10)	Yes	Valid values given in description
5	sample_matrix_code	Code which distinguishes between different types of sample matrix.	Text (2)	Yes	Matrix table

Table 4-2. Chemistry sample data structure (continued)

Position	Field Data	Description	Data Type	Required?	Valid Values?
6	sample_type_ code	Code which distinguishes between different types of samples.	Text (3)	Yes	Sample_ type_code table
7	sample_source	This field identifies where the sample came from Field or fixed-base Laboratory. Valid values: "field", and "lab".	Text (5)	Yes	Valid values given in description
8	sample_coll_ proc_id	Sample Collection Procedure ID. References Sample_Collect_Procedures table.	Text (8)	Yes	No
9	sample_id_ duplicate	Identifies the sample_id of a duplicate sample. For example, the value in this field would be the related sample_id for a blind duplicate sample.	Text (20)	Required if applicable	No
10	sample_group	Special ID for group of samples from a sampling event, special collection process, unusual or specialized catagory of stations.	Text (10)	If available	No
11	sample_date	Date sample was collected (in MM/DD/YYYY format for EDD).	Date MM/DD/ YYYY	Yes	No
12	sample_time	Time sample collection began in 24 hour (military) format.	Time (HH:MM)	If available	No
13	upper_depth	Depth (in depth_unit) to top of sample below land surface (surf_elev). Use for groundwater samples in a well only if discrete samples are taken at different depths in a single well (packer tests, etc.). Required for point samples (direct push, etc.).	Num (XXXX. XXXX)	Yes	No
14	lower_depth	Depth (in depth_unit) to bottom of sample below land surface (surf_elev). Use for groundwater samples in a well only if discrete samples are taken at different depths in a single well (packer tests, etc.). Null for point samples (direct push, etc.).	Num (XXXX. XXXX)	Required if applicable	No
15	depth_unit	Unit of measure for depths.	Text (10)	Yes	Units table
16	chain_of_ custody	Chain of custody identifier. A single sample may be assigned to only one chain of custody.	Text (15)	If available	No
17	sent_to_lab_date	Date sample was sent to lab (in MM/DD/YYYY format for EDD).	Date MM/DD/ YYYY	If available	No
18	sample_receipt_ date	Date that sample was received at laboratory (in MM/DD/YYYY format for EDD).	Date MM/DD/ YYYY	If available	No

Table 4-2. Chemistry sample data structure (continued)

Position	Field Data	Description	Data Type	Required?	Valid Values?
19	sampler_name	Name of individual that collected the sample. FORMAT: LASTNAME_FIRSTNAME. NOTE use of "_" as a separator!	Text (30)	If available	No
20	task_code	Code used to identify the task under which the field sample was retrieved. The format for this field is XX-P#-##-##-####. Where XX is the type of task required (see valid values), and P# is the phase, and ##-##-#### is the date in month, day and year.	Text (20)	If available	No
21	qapp_approval_ date	QAPP Approval Date.	Date MM/DD/ YYYY	If available	No
22	sample_comment	Comments related to the sample.	Text (254)	If available	No

4.3 Chemistry Test/Results

The Chemistry Test/Results file contains data concerning analytical tests and results performed on samples. All data provided by PRPs are expected to be validated prior to submittal to EPA. Each chemistry test/results file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2TRSQC_v1.txt (or .csv)

Table 4-3. Chemistry test/results with QC data file structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	sample_id	Unique sample identifier. Each sample must have a unique value, including spikes and duplicates. Laboratory QC samples must also have unique identifiers.	Text (20)	Yes	No
2	param_name	Parameter names were derived from the Chemical Abstracts Registry (CAS) Number for the parameter if available. Otherwise EPA STORET codes were used.	Text (60)	Yes	Param_ name table

Table 4-3. Chemistest/results with QC data file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
3	cas_number	Analyte code derived from the Chemical Abstracts Registry (CAS) Number for the parameter if available. Otherwise EPA STORET codes are used. See Param_name valid value table in appendix.	Text (15)	Yes	Param_ name table
4	fraction	Portion of the sample or substance being analyzed. Eg. T =total, D=dissolved, etc	Text (10)	Yes	Fraction table
5	value_type	Value type reflected in result_value. Valid values: "actual", "estimated" or "calculated".	Text (10)	If available	Valid Values included in field description
6	stat_type	Statistic type reflected in the result_value. Max, min, mean, etc. Leave null if no statistical value was used.	Text (20)	If available	Stat_type table
7	duration_basis	Time over which test or analysis or observation was conducted. Use duration_basis valid values in appendix.	Text (20)	If available	Duration_ basis table
8	temperature_ basis	Temperature (degrees C) at which test or analysis or observation was conducted. Not related to temperature field for groundwater or surface water temperature. Use temperature_basis valid values.	Text (20)	If available	Temperatur e_basis table
9	result_value	The measured value of the parameter, result of analysis or test reported at an appropriate number of significant digits. May be blank for non-detects.	Text (20)	Yes	No
10	result_unit	Units of measurement for the result.	Text (15)	Yes	Units table
11	container_type	Describes the style and material of the container in which this sample was collected and transported.	Text (30)	If available	Container_ type table
12	container_size	The volume of the container specified by container_type in the format ZZZZ.ZZ.	Text (7)	If available	No
13	container_size_ units	Units for the volume specified in container_size.	Text (3)	If available	Units table
14	container_color	Color of the container used to collect and transport sample.	Text (15)	If available	Container_ color table
15	temp_preserve_ type	Specify the type of temperature preservation used.	Text (30)	If available	Temp_ preserve_ type table
16	chem_ preservative	A description of the chemical preservation used.	Text (10)	If available	Chem_ preserve_ type table

Table 4-3. Chemistest/results with QC data file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
17	lab_anl_method_ code	Laboratory analytical method code. Controlled vocabulary, see the appendix for valid values.	Text (35)	Yes	Lab_anl_ method_ code table
18	analysis_date	Date of sample analysis in MM/DD/YYYY format. May refer to either beginning or end of the analysis as required by EPA.	Date MM/DD/ YYYY	Yes	No
19	analysis_time	Time sample analysis began in 24_hr (military) format. Note that this field, combined with the analysis_date field is used to distinguish between retests and reruns (if reported).	Time (HH:MM)	Yes	No
20	test_type	Type of test in the laboratory. Valid values include: "initial", "reextract1", "reextract2", "reextract3", "reanalysis", "dilution1", "dilution2" and "dilution3".	Text (10)	Yes	Valid values given in definition
21	lab_matrix_code	Code which describes the matrix as analyzed by the lab. May differ from sample_matrix_code. See matrix valid value table in the appendix.	Text (2)	Yes	Matrix table
22	analysis_location	Note where was sample analyzed. Valid values: FL for mobile Field Laboratory analysis, or LB for fixed based Laboratory analysis.	Text (2)	Yes	Valid values given in description
23	wet_or_dry_basis	Must be either "Wet" for wet_weight basis reporting, "Dry" for dry_weight basis reporting, or "NA" for tests for which this distinction is not applicable.	Text (3)	Yes	Valid values given in description
24	dilution_factor	Dilution factor at which the analyte was measured effectively. Enter "1" if not diluted.	Num (XXX.X XX)	Yes	No
25	prep_method	Laboratory sample preparation method code. A controlled vocabulary. See appendix for valid values.	Text (35)	If available	Prep_ method_ code table
26	prep_date	Date sample preparation began in MM/DD/YYYY format.	Date MM/DD/ YYYY	If available	No
27	prep_time	Time sample preparation began in 24_hr (military) format. Time zone & daylight savings must be same as analysis_date.	Time (HH:MM)	If available	No

Table 4-3. Chemistest/results with QC data file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
28	lab_name_code	Unique identifier of the laboratory as defined by the EPA. Controlled vocabulary, see the appendix for valid values.	Text (10)	Yes	Lab_name_ code table
29	qc_level	Quality control level of analysis. Must be either "screen" or "definitive".	Text (10)	Yes	Valid values given in description
30	lab_sample_id	Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event).	Text (20)	Yes	No
31	percent_ moisture_lab_calc	Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Report 70.1% as 70.1 not as 70.1%.	Text (5)	If available	No
32	subsample_ amount	Amount of sample used for test.	Text (14)	If available	No
33	subsample_ amount_unit	Unit of measurement for subsample amount. Controlled vocabulary, see the appendix for valid values.	Text (15)	If available	Units table
34	test_comment	Comments about the test, analysis, procedure, etc., as necessary.	Text (254)	If available	No
35	final_volume	The final volume of the sample after sample preparation. Include all dilution factors.	Text (15)	If available	No
36	final_volume_uni t	The unit of measure that corresponds to the final_volume.	Text (15)	If available	No
37	result_error_delta	Error range applicable to the result value; typically used only for radiochemistry results.	Text (20)	If available	No
38	result_type_code	Must be either "TRG" for a target or regular result, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds.	Text (3)	Yes	Valid values given in description
39	reportable_result	Must be "Y" for results considered to be reportable, or "N" for other results.	Text (1)	Yes	Valid values given in description
40	detect_flag	Must be either "Y" for detected analytes or "N" for non_detects.	Text (1)	Yes	Valid values given in description

Table 4-3. Chemistest/results with QC data file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
41	lab_qualifiers	Qualifier flags assigned by the laboratory. This is a controlled vocabulary column. See valid values in the qualifiers table in the appendix.	Text (7)	Required if applicable	Qualifiers table
42	validator_ qualifiers	Qualifier flags assigned by the validation firm. This is a controlled vocabulary column. See valid values in the qualifiers table in the appendix.	Text (7)	Required if applicable	Qualifiers table
43	organic_Y/N	Must be either "Y" for organic constituents or "N" for inorganic constituents.	Text (1)	Yes	Valid values given in description
44	reporting_ detection_limit	Concentration level above which results can be quantified with 95% confidence limit. Must reflect conditions such as dilution factors and moisture content. Report as the sample specific detection limit.	Text (20)	Yes	No
45	quantitation_limit	Concentration level above which results can be quantified with 98% confidence limit. Must reflect conditions such as dilution factors and moisture content. Report as the sample specific quantitation limit.	Text (20)	Yes	No
46	detection_limit_u nit	Units of measurement for the detection limit(s). Controlled vocabulary, see Units valid value table in the appendix. This field is required if a reporting_detection_limit is reported.	Text (10)	Yes	Units table
47	result_comment	Result specific comments.	Text (254)	If available	No
48	qc_original_conc	The concentration of the analyte in the original (unspiked) sample. Might be required for spikes and spike duplicates (depending on user needs). Not necessary for surrogate compounds or LCS samples where the original concentration is assumed to be zero.	Text (14)	If available	No
49	qc_spike_added	The concentration of the analyte added to the original sample. Might be required for spikes, surrogate compounds, LCS and any spiked sample (depending on user needs).	Text (14)	If available	No

Table 4-3. Chemistest/results with QC data file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
50	qc_spike_ measured	The measured concentration of the analyte. Use zero for spiked compounds that were not detected in the sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).	Text (14)	If available	No
51	qc_spike_ recovery	The percent recovery calculated as specified by the laboratory QC program. Always required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report 120% as 120).	Text (14)	If available	No
52	qc_dup_original_ conc	The concentration of the analyte in the original (unspiked) sample. May be required for spike or LCS duplicates only (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero)	Text (14)	If available	No
53	qc_dup_spike_ added	The concentration of the analyte added to the duplicate sample. Might be required for spike or LCS duplicates, surrogate compounds, and any spiked and duplicated sample (depending on user needs).	Text (14)	If available	No
54	qc_dup_spike_ measured	The measured concentration of the analyte in the duplicate. Use zero for spiked compounds that were not detected in the sample. Might be required for spike and LCS duplicates, surrogate compounds, and any other spiked and duplicated sample.	Text (14)	If available	No
55	qc_dup_spike_ recovery	The duplicate percent recovery calculated as specified by the laboratory QC program. Always required for spike or LCS duplicates, surrogate compounds, and any other spiked and duplicated sample. Report as percentage multiplied by 100 (e.g., 50% as 50)	Text (14)	If available	No
56	qc_rpd	The relative percent difference calculated as specified by the laboratory QC program. Required for duplicate samples as appropriate. Report as percentage multiplied by 100 (e.g., report 30% as 30).	Text (8)	If available	No

Table 4-3. Chemistest/results with QC data file structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
57	qc_spike_lcl	Lower control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report 60% as 60).	Text (8)	If available	No
58	qc_spike_ucl	Upper control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report 120% as 120).	Text (8)	If available	No
59	qc_rpd_cl	Relative percent difference control limit. Required for any duplicated sample. Report as percentage multiplied by 100 (e.g., report 25% as 25).	Text (8)	If available	No
60	qc_spike_status	Used to indicate whether the spike recovery was within control limits. Use the * character to indicate failure, otherwise leave blank. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample.	Text (10)	If available	No
61	qc_dup_spike_ status	Used to indicate whether the duplicate spike recovery was within control limits. Use the * character to indicate failure, otherwise leave blank. Required for any spiked and duplicated sample.	Text (10)	If available	No
62	qc_rpd_status	Used to indicate whether the relative percent difference was within control limits. Use the * character to indicate failure, otherwise leave blank. Required for any duplicated sample.	Text (10)	If available	No
63	test_batch_type	Lab batch type. Valid values include "Prep," "Analysis," and "Leach." This is a required field for all batches.	Text (10)	Yes	Valid values given in description
64	test_batch_id	Unique identifier for all lab batches.	Text (20)	Yes	No

4.4 Chemistry Water Level

The Chemistry water level file contains information on water levels measured during sampling activities. It contains 16 fields that can be populated for each water level reading. Each water level file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2GWTR_v1.txt (or .csv)

Table 4-4. Chemistry water level file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	station_id	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. Examples of possible station_id are MW-01, SW-1, SB6, etc. Acts as a link to the Location table.	Text (20)	Yes	No
2	well_id	Required if location is a well. Code is the same as that used for station_id, *e.g.*, if station_id is MW-01 then well_id is MW-01. Leave null if location is other than a well.	Text (20)	Yes	No
3	measurement_date	Date of field chemistry measurement, water level measurement, etc.	Date MM/DD/YYYY	Yes	No
4	measurement_time	Time of water level measurement, field chemistry, etc. in 24 hour (military) format.	Time (HH:MM)	Yes	No
5	water_level_ historic_ref_elev	Historical reference elevation (in elev_unit) used calculate elevation from past water_level_depth measurements older than reference_point_start_date	Num (XXXXX.XXX)	If available	No
6	water_level_depth	Depth (in depth_unit) to ground water below reference_point defined in well table (Table 5.3).	Num (XXXXX.XXX)	Yes	No
7	water_level_elev	Elevation of water level (in elev_unit).	Num (XXXXX.XXX)	Yes	No
8	water_level_depth _corrected	Depth to water level (in depth_unit) after any necessary corrections, e.g., if corrections were necessary to water_level_depth because free product was encountered.	Num (XXXXX.XXX)	Required if applicable	No
9	water_level_elev_ corrected	Corrected water level elevation (in elev_unit).	Num (XXXXX.XXX)	Required if applicable	No
10	measured_depth_ of_well	The depth (in depth_unit) below land surface to the bottom of the well.	Num (XXXXX.XXX)	Required if applicable	No
11	depth_unit	Unit of measure for depths.	Text (10)	Yes	Units table

Table 4-4. Chemistry water level file data structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
12	technician_name	Name of technician measuring water level. FORMAT: LASTNAME_FIRSTNAME. NOTE use of "_" as a separator!	Text (30)	If available	No
13	well_dry_yn	Is the well dry? "Y" for yes or "N" for no.	Text (1)	If available	Valid values given in description
14	measurement_ method	Method used to make water level measurements.	Text (20)	If available	No
15	dip_or_elevation	Use either "elevation" or "dip." Use "elevation" if water level measurement is above the datum (i.e., artesian well) or "dip" if water level is below datum.	Text (10)	Yes	Valid values given in description
16	water_level_remar k	Remark on measurement.	Text (254)	If available	No

4.5 Sample Collection Procedures Data

The sample collection procedures table contains fields that further describe how a sample was collected. Table 4.5 describes these fields. Each sample collection procedures file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2SCP_v1.txt (or .csv)

Table 4-5. Sample collection procedures file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	sample_coll_proc_id	Sample Collection Procedure ID. References Sample_Collect_Procedures table.	Text (8)	Yes	No
2	sample_coll_proc_name	Descriptive name of this Sample Collection Procedure.	Text (60)	Yes	Gear_ type table
3	sample_coll_proc_desc	Description of this Sample Collection Procedure.	Text (254)	If available	No
4	sample_coll_proc_citation	Citation for this field procedure in the format: Title_Author_Publisher_Year_Volume and Pages_Comments	Text (254)	If available	No

5. FORMATS FOR GEOLOGY FILES

This section contains tables that define the file structures for the Geology EDD. The file structures include lithology, well, and well construction. The columns marked "Required" must be reported for each row in the file. If they are not reported, the data will not load. The columns marked "If available" should also be reported. If the data are not available, report in the cover letter to the project RPM the data that is not available and the reason why.

Data providers are required to submit all applicable geology files for all monitoring wells and borings.

5.1 Lithology

The lithology file contains all the lithology data for the borings. It contains 9 fields that can be populated for each lithologic unit. Optional comments can be added to describe a depth specific observation within a lithologic unit. For example, you could describe a soil fracture that was noted at a depth of 15 feet within a clay unit. First completely describe the clay unit in a row of the lithologic file. Then add a row with only the station_id, start_depth (*i.e.*, depth below ground surface of the fracture) and the lithology_remark filled. Use the lithology_remark field to fully describe the fracture. All other fields on that line must be reported as null. An unlimited number of optional depth specific remarks can be added for each lithologic unit. Each lithology file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2LTH_v1.txt (or .csv)

5.2 Well

The well file contains general information relating to well installation. Each well file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2WEL_v1.txt (or .csv)

Table 5-1. Lithology file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	station_ID	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. Examples of possible station_id are MW-01, SW-1, SB6, etc. References the Location table.	Text [20]	Required	No
2	start_depth	The start depth of the lithologic unit in feet below ground surface	Num (XXXX.XXXX)	Required	No
3	material_type	The type of material that composes the lithologic unit.	Text [40]	Required	material_ type table
4	consolidated_yn	Was the lithologic unit consolidated? Enter "Y" for yes or "N" for no.	Text [1]	Required	Valid values given in description
5	geo_unit_code_1	The data provider's interpretation of the hydrogeologic unit present at this lithologic unit. E.g. aquifer 1, aquifer 2, upper clay unit.	Text [20]	If Available	No
6	geo_unit_code_2	Alternate unit grouping. THis can be a subclassification of geo_unit_code_1 or a layer used in computer modeling.	Text [20]	If Available	No
7	total_depth	Total depth of well, boring, direct push, etc. (in depth_unit) below land surface (surf_elev).	Num (XXXX.XXXX)	Required	No
8	color	Color of this lithologic unit.	Text [20]	If Available	No
9	Lithology_remark	Comment on this lithologic unit.	Text [255]	If Available	No

Table 5-2. Well file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	station_ID	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. Examples of possible station_id are MW-01, SW-1, SB6, etc. References the Location table.	Text [20]	Required	No
2	well_ID	Required if location is a well. Code is the same as that used for station_ID, e.g., if station_ID is MW-01 then well_ID is MW-01.	Text [20]	Required	No
3	reference_point_elev	MAD Code Req#6C Elevation (in reference_point_unit) of reference point for depth to groundwater measurements. Use high point on inner well casing (riser) as the measuring point for depths to water.	Num (XXXXXX X.XXXX)	Required	No
4	reference_point_unit	MAD Code Req#6D Unit of measure for the well reference_point_elev. Valid values: m = meters & ft = feet.	Text (10)	Required	Units table
5	reference_point_ datum_code	MAD Code Req#6F Datum used to determine the reference_point_elev.	Text (3)	Required	Elevation_ datum_ code table
6	reference_point_desc	MAD Code Opt#3B Description of the reference_point, such as "top of well casing" used for measurement of depth or depth to water."	Text (254)	Required	No
7	reference_point_ start_date	MAD Code Req#6E Date current datum was first used. Leave null if sample is not from well.	Date MM/DD/Y YYY	Required	No
8	step_or_linear	Use only for re-surveys of well elevations. If a section of the well casing was removed or added use "step" as the value. If nothing was added or removed from the last survey use "linear" as the value.	Text (6)	Required	Valid values given in description
9	depth_of_well	Depth below ground surface of the well bottom.	Num (XXXX.XX XX)	Required	No
10	depth_unit	Unit of the measurement for depth_of_well.	Text [15]	Required	Units table
11	depth_measure_ method	Method of measuring depth of well.	Text [20]	Required	No
12	stickup_height	Height of the well casing above ground surface	Text [8]	Required	No
13	stickup_unit	Unit of the measurement for stickup_height.	Text [15]	Required	Units table
14	sump_length	Length of the sump.	Text [20]	Required	No
15	sump_unit	Unit of measurement for sump_length.	Text [15]	Required	Units table
16	construct_complete_ date	Date on which well construction was completed.	Date	Required	No

Table 5-2. Well file data structure (continued)

Position	Field Name	Description	DataType	Required?	Valid Values?
17	construct_contractor	Name of the contracting company that installed the well.	Text [10]	Required	No
18	well_remark	Comment on the well.	Text [255]	If Available	No

5.3 Well Construction

The well construction file contains information relating to well construction and well segments. Information is required for all well segments within each well, including surface plug, protective casing, well casing, annular backfill, annular seal, screen, and filter pack. In order to obtain the depth of groundwater samples, it is particularly important that the depths of the top and bottom of the well screen be submitted for each well. Each well construction file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2WSG_v1.txt (or .csv)

Table 5-3. Well construction file data structure

Position	Field Name	Description	Data Type	Required?	Valid Values?
1	station_ID	Location identifier of sample collection, soil boring, well installation, field observations, etc. to appear on GIS maps graphs & tables, etc. Examples of possible station_id are MW-01, SW-1, SB6, etc. References the Location table.	Text [20]	Required	No
2	well_ID	Required if location is a well. Code is the same as that used for station_ID, e.g., if station_ID is MW-01 then well_ID is MW-01.	Text [20]	Required	No
3	segment_type	Type of well segment being described. Eg. screen, casing, filter pack.	Text [20]	Required	Well_constr_mat table
4	construction_material	Type of material used in the well segment.	Text [20]	Required	Well_constr_mat table
5	start_depth	The start depth of the segment.	Num (XXXX.XXXX)	Required	No

Table 5-3. Well constructin file data structure (continued)

Position	Field Name	Description	Data Type	Required?	Valid Values?
6	end_depth	The end depth of the segment.	Num (XXXX.XXXX)	Required	No
7	depth_unit	Unit of measurement for start_depth and end_depth.	Text [15]	Required	Units table
8	inner_diameter	The inside diamter of the segment	Num (XXXX.XXXX)	Required	No
9	outer_diameter	The outside diameter of the segment.	Num (XXXX.XXXX)	Required	No
10	diameter_unit	Unit of measurement for inner_diameter and outer_diameter.	Text [15]	Required	Units table
11	slot_size	Width of slots if the segment is a sreened interval.	Num (XXXX.XXXX)	Required if screen segment	No
12	slot_size_unit	Unit of measurement for slot_size.	Text [15]	Required if screen segment	Units table
13	well_constr_remark	Comment on well construction segment described.	Text [255]	If available	No

6. TECHNICAL SUPPORT

EPA Region 2 provides technical support for users of this EDD. For questions concerning data, data formats, and submission procedures please contact Andy Crossland at US EPA (212) 637- 4436 crossland.andy@epa.gov.